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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,509	07/24/2003	Kramadhathi V. Ravi	042390P16670	3259

7590 11/22/2004  
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EXAMINER

DANG, PHUC T

ART UNIT PAPER NUMBER

2818

DATE MAILED: 11/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/627,509

Applicant(s)

RAVI, KRAMADHATI V.

Examiner

PHUC T DANG

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on election filed on October 4, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-17 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 12 is/are rejected.
- 7) ☒ Claim(s) 6-11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 072403.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

### **Election/Restrictions**

1. Applicant's election filed on October 4, 2004 has been considered.

In election, Applicants elect Group I (claims 1-17) without traverse and cancel Group II (claims 18-21).

Claims 1-17 are currently pending in the application.

### **Oath/Declaration**

2. The oath/declaration filed on July 24, 2003 is acceptable.

### **Information Disclosure Statement**

3. The office acknowledges receipt of the following items from the applicant:

Information Disclosure Statement (IDS) filed on July 24, 2003.

### **Specification**

4. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### **Claim Objections**

5. Claim 1 is objected to because of the following informalities:

In claim 1, line 3, insert "." after -- manufactured --.

### **Claim Rejections - 35 USC § 102**

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-3 are rejected under 35 U.S.C. 102 (e) as being anticipated by En et al., hereafter "En" (U.S. Patent No. 6,573,172 B1).

Regarding claim 1, En discloses a method of fabricating a microelectronic die comprising: manufacturing transistors (102, 104, Fig. 2A) in and on a semiconductor substrate (106, Fig. 2A);

stresssing a channel of each transistor (130, Fig. 2B) after the transistors are manufactured.

Regarding claim 2, En discloses a tensile stress is applied o each channel [Fig. 2B].

Regarding claim 3, En discloses the channels re stressed by at least partially removing a portion of a handle substrate to which the semiconductor substrate is attached [col. 5, lines 61-65].

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject

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matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over En in view of Fritz (U.S. Patent No. 6,734,540).

En discloses all the features of the claimed invention as discussed above, but does not disclose an intermediate substrate is located between the semiconductor substrate and the handle substrate, the intermediate substrate having a lower CTE than the handle substrate.

Fritz, however, discloses an intermediate substrate is located between the semiconductor substrate and the handle substrate, the intermediate substrate having a lower CTE than the handle substrate [col. 5, lines 37-50].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the teaching of Fritz to En discussed above such that an intermediate substrate is located between the semiconductor substrate and the handle substrate, the intermediate substrate having a lower CTE than the handle substrate for a purpose of improving a manufacturing of a microelectronic die.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over En in view of Fritz and further in view of Dutta et al., hereafter "Dutta" (U.S. Patent No. 5,853,888).

En discloses all the features of the claimed invention as discussed above, but does not disclose the intermediate substrate is made of diamond.

Dutta, however, discloses the intermediate substrate is made of diamond [Abstract].

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the teaching of Dutta to En discussed above such that the intermediate substrate is made of diamond for a purpose of improving a manufacturing of a microelectronic die.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over En in view of Gilleo et al., hereafter "Gilleo" (U.S. Patent No. 6,323,062).

En discloses all the features of the claimed invention as discussed above, but does not disclose a step of singulating the semiconductor substrate after the channels are stressed.

Gilleo, however, discloses a step of singulating the semiconductor substrate after the channels are stressed [Fig. 2 and col. 3, lines 61-col. , lines 4-6].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the teaching of Gilleo to En discussed above such that a step of singulating the semiconductor substrate after the channels are stressed for a purpose of improving a manufacturing of a microelectronic die.

#### **Allowable Subject Matter**

10. Claims 13-17 would be allowed.

The following is a statement of reason for the indication of allowable subject matter:

Claims 13-17 are considered allowable since the prior art of record and the considered pertinent to the applicant's disclosure does not teach or suggest the claimed invention having a step of allowing the first combination wafer to cool, the intermediate substrate having a lower

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CTE than the handle substrate so that the combination wafer bows into a first shape as recited in claim 13.

Claims 6-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the Prior Art of record does not disclose a step of forming an intermediate substrate on a handle substrate; allowing the intermediate substrate and handle substrate to cool, the intermediate substrate having a different CTE than the handle substrate; connecting the semiconductor substrate to the intermediate substrate; and at least partially removing the handle substrate as recited in claim 6 and the intermediate substrate and the handle substrate bow into a first shape when allowed to cool, and the semiconductor substrate and the intermediate substrate bow into a final shape when the handle substrate is removed as recited in claim 7 and a step of changing the first shape into a second shape with less bow than the first shape before the semiconductor substrate is connected to the intermediate substrate as recited in claim 8 and the first shape is changed into the second shape by applying a compensating layer as recited in claim 9.

Claims 10-11 are depend on claim 9, so they also would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 1 would be allowable if rewritten or amended to overcome the Objection sets forth in this Office action.

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### Conclusion

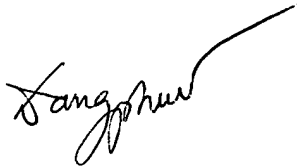
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is (571) 272-1776. The examiner can normally be reached on 8:00 am-5:00 pm.

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and After Final communications.

13. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Phuc T. Dang

PD



Primary Examiner

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